

1 Claims

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3 1. A cardiovascular stent comprising:
4 a generally tubular body, and
5 a synthetic one-way valve capable of moving
6 from a first open position to a second closed
7 position, wherein, in use, movement of fluid in
8 a first direction through the stent causes the
9 valve to adopt the open position and movement
10 of fluid in a second opposite direction causes
11 the valve to adopt the closed position.

12

13 2. A cardiovascular stent as claimed in claim 1,
14 wherein the valve is formed from resilient
15 material.

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17 3. A cardiovascular stent as claimed in claim 2
18 wherein the valve is constructed such that, in
19 use, movement of fluid in the first direction
20 through the stent urges the resilient material
21 of the valve to adopt a configuration in which
22 the aperture defined by the material is
23 substantially circular in cross-section thereby
24 enabling increased fluid to flow through the
25 valve and thus through the stent.

26

27 4. A cardiovascular stent as claimed in claim 2 or
28 3 wherein the valve comprises two leaflets
29 formed from resilient material and wherein, in
30 use, when fluid is flowing in the second
31 direction through the stent or when no fluid is
32 flowing through the stent, the leaflets are

1 urged towards each other such that the passage
2 of fluid is minimised.

3

4 5. A cardiovascular stent as claimed in any one of
5 the preceding claims, wherein the valve
6 comprises at least one cantilever member having
7 a first end and a second end, said cantilever
8 member being pivoted at said first end to the
9 stent, the cantilever member being resiliently
10 pivotable from a first extended position in
11 which the valve is in a closed position to a
12 second position in which the valve is in the
13 open position.

14

15 6. A cardiovascular stent as claimed in claim 5
16 wherein the valve comprises two cantilever
17 members.

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19 7. A cardiovascular stent as claimed in any one of
20 the preceding claims wherein the stent is
21 constructed such that it can be expanded in
22 diameter from a "collapsed" configuration to an
23 "expanded" configuration, wherein in the
24 collapsed configuration, the stent is of
25 narrower diameter than in the expanded
26 configuration.

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28 8. A cardiovascular stent as claimed in claim 7
29 when dependent on claim 5 or claim 6 wherein on
30 expansion of the diameter of the stent, the
31 second end of the cantilever member pivots to
32 an extended position in which the material

1 forming the valve and defining the aperture of
2 the valve when in the open position is pulled
3 such that the area of the aperture formed by
4 the material is decreased.

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6 9. A cardiovascular stent as claimed in any one of
7 the preceding claims wherein the stent is
8 resiliently deformable at one or both ends to
9 receive and enable connection with a second
10 stent.

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12 10. A cardiovascular stent as claimed in any one of one
13 of the preceding claims wherein the stent is
14 shaped at one or both ends to enable connection
15 to a second stent.

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17 11. A cardiovascular stent as claimed in any one of
18 the preceding claims for linking a coronary
19 artery to the left ventricle of the heart.

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21 12. A cardiovascular stent as claimed in any one of
22 claims 1 to 10 for linking a first portion of
23 an ascending venous structure and a second
24 portion of the same ascending venous structure.

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26 13. A method for treating a full or partial
27 occlusion of a blood vessel comprising the
28 steps of:

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30 providing stent means wherein said stent means
31 comprise at least one stent as claimed in
32 claims 1 to 12, a first end of the lumen of the

1 stent means being in communication with a
2 cardiovascular compartment on a first side of
3 the occlusion,
4
5 the second end of the lumen of the stent means
6 being in communication with a cardiovascular
7 compartment on the other side of the occlusion
8 and allowing blood flow from the first side of
9 the occlusion to the other side of the
10 cardiovascular compartment through the lumen of
11 the stent means.
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13
14. A method as claimed in claim 13 wherein the
15 stent means comprises a plurality of stents
16 longitudinally aligned to allow the flow of
17 blood from a stent at a first end of the stent
18 means to a stent at a second end of the stent
19 means.
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21. A method as claimed in claim 13 or claim 14
22 further comprising the step of increasing the
23 diameter of the stent from a reduced diameter
24 in a collapsed position to an increased
25 diameter in an expanded position.
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27. A method for treating varicose veins comprising
28 the step of:
29
30 positioning stent means comprising at least one
31 stent as claimed in claims 1 to 12 in a vein.
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- 1 17. A method for treating varicose veins comprising
2 the step of:
3
4 replacing at least a part of a vein with stent
5 means comprising at least one stent of the
6 first aspect of the invention.
7
8 18. Tube means comprising a tubular portion and a
9 valve, said valve comprising at least one
10 cantilever member having a first end and a
11 second end, said cantilever member being
12 pivoted at said first end to the tubular
13 portion, the cantilever member being
14 resiliently pivotable from a first extended
15 position in which the valve is in the closed
16 position to a second position in which the
17 valve is in the open position.
18
19 19. Tube means as claimed in claim 18 wherein in
20 moving from the closed position to the open
21 position the aperture of the valve is moved
22 from being ellipsoidal to substantially
23 circular.
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25 20. A device for moving fluid comprising a tube as
26 claimed in claims 18 or 19.
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